ECONOMIC GEOLOGY

AND THE

BULLETIN OF THE SOCIETY OF ECONOMIC GEOLOGISTS

EDITOR: ALAN MARA BATEMAN
Yale University, New Haven, Connecticut

BUSINESS EDITOR: MORRIS M. LEIGHTON
Illinois Geological Survey, Urbana, Illinois

ASSISTANT EDITORS

H. E. MCKINSTRY, *Harvard University*
JOE W. PEOPLES, *Wesleyan University*
F. M. CHACE, *U. S. Geological Survey*
J. D. BATEMAN, *Yellowknife, N.W.T.*
R. H. JAHNS, *California Institute of Technology, Pasadena*

ASSOCIATE EDITORS

CHARLES KENNETH LEITH
University of Wisconsin, Madison, Wis.

D. F. HEWETT
U. S. Geological Survey, Washington, D. C.

A. I. LEVORSEN
Department of Geology, Stanford University, Calif.

B. S. BUTLER
Univ. of Arizona, Tucson, Ariz.

W. E. WRATHER
U. S. Geological Survey, Washington, D. C.

HEINRICH RIES
Cornell University, Ithaca, N. Y.

L. C. GRATON
Harvard University, Cambridge, Mass.

E. S. MOORE
Royal Ontario Museum, Toronto, Can.

PER GEIJER
Geological Survey of Sweden, Stockholm, Sweden

P. F. FOURMARIER
Liège University, Liège, Belgium

M. S. KRISHNAN
Geological Survey, Calcutta, India

DJALMA GUIMARÃES
Instituto de Tecnologia Industrial Belo Horizonte, Minas Gerais, Brazil

T. W. GEVERS
University of the Witwatersrand, Johannesburg, S. Africa

VOLUME 45

NEW HAVEN, CONNECTICUT
THE ECONOMIC GEOLOGY PUBLISHING COMPANY
1950

SOCIETY OF ECONOMIC GEOLOGISTS

THE PUBLICATIONS OF WHICH CONSTITUTE
A PART OF THIS JOURNAL

OFFICERS FOR 1950

MORRIS M. LEIGHTON.....*President*
IRA B. JORALEMON....*Vice President and President elect*
T. B. NOLAN.....*Past President*
ANTON GRAY....*Vice President elect*
OLAF N. ROVE.....*Secretary*
U. S. Geological Survey, Washington 25, D. C.
JOSEPH T. SINGEWALD, JR...*Treasurer*
Johns Hopkins Univ., Baltimore, Md.

Councilors

1950	*1951*	*1952*
CARLTON D. HULIN	PHILIP J. SHENON	H. M. BANNERMAN
DONALD DAVIDSON	ANDREW LEITH	JOHN S. BROWN
WILLIAM CALLAHAN	JOHN GUSTAFSON	CHARLES F. PARK, JR.

Regional Vice-Presidents

OLAF H. ODMAN, Europe.....CHINGYUAN Y. LI, Asia.....
TARRAN GUERNSEY, Africa...VICTOR DOLMAGE, North America...
H. C. ALVES DE SOUZA, South America....N. H. FISHER, Australia.

Executive Committee

MORRIS M. LEIGHTON, *Chairman* — T. B. NOLAN, OLAF N. ROVE, IRA B. JORALEMON, JOSEPH T. SINGEWALD, JR.

Finance Committee

WILLIAM CALLAHAN, *Chairman* — W. O. HOTCHKISS, JOSEPH T. SINGEWALD, JR., T. B. NOLAN

Program Committee

CHAS. F. DEISS, *Chairman* — JAMES A. NOBLE, GEORGE W. WHITE, OLAF N. ROVE, DONALD DAVIDSON

Committee on Publications

EUGENE N. CAMERON, *Chairman* — EDWARD L. CLARK, H. E. MCKINSTRY

Nominating Committee

CHARLES F. PARK, JR., *Chairman* — H. M. BANNERMAN, GEORGE M. FOWLER

Admissions Committee

A. C. BEVAN, *Chairman* — PHILIP J SHENON, H. G. HERSHEY, J. E. HAWLEY, F. C. KRUGER

Auditing Committee

FRANCIS G. WELLS, *Chairman* — A. NELSON SAYRE

Coal Research Committee

Executive Members: G. H. Cady, *Chairman*, Paul Averitt, Clayton G. Ball

CONTENTS OF VOLUME 45.

Number 1.

Uranium-Bearing Sandstone Deposits of the Colorado Plateau.....*R. P. Fischer* 1
Uranium in Pegmatites.....*Lincoln R. Page* 12
Characteristics of Marine Uranium-Bearing Sedimentary Rocks
V. E. McKelvey and John M. Nelson 35
Uniformitarianism and the Ideal Vein.....*Harrison Schmitt* 54
A Method for Determining the Direction of Flow of Hydrothermal Solutions
F. Gordon Smith 62
Report of the Subcommittee on Ground Water of the General Committee on Research of the Society of Economic Geologists.....*S. W. Lohman* 70
Geochemistry of Ground Water.....*John D. Hem* 72

Discussion and Communications:
Ore and Granitization.....*C. J. Sullivan* 82
A Reply.....*M. D. Garretty* 85

Reviews:
Minerals of Western Australia, Vol. 1 (Simpson)..... 86
Principles of Structural Geology, 4th Edit. (Nevin)..... 86
Introduction to Physical Geology, 5th Edit. (Miller)..... 86
Geology—Principles and Processes, 3rd Edit. (Emmons, Thiel, Stauffer & Allison) 86
Conservation in the United States, 3rd Edit. (Gustafson, Guise, Hamilton Jr., & Ries)..... 87
Books Received.....*Charles H. Smith* 87

Scientific Notes and News..... 93

Number 2.

Lithium-Bearing Pegmatites in Northern Quebec.....*Duncan R. Derry* 95
Geologic and Structural Environment of the Iron Ore Deposits of Mexico
Teodoro Flores 105
Ground-Water Geology of the Gonaïves Plain, Haiti
George C. Taylor, Jr., and Rémy C. Lemoine 127
Geology of the Broadway Tunnel, Berkeley Hills, California.....*Ben M. Page* 142
Radiation Surveys with a Scintillation Counter.....*George M. Brownell* 167

Discussion and Communications:
The Emerald Isle Copper Deposit.....*Fred Searls, Jr.* 173
Ribbon Structure in Gold-Quartz Veins.....*Ellsworth Y. Dougherty* 177

LINDA HALL LIBRARY
KANSAS CITY, MO.

Reviews:

Industrial Minerals and Rocks, 2nd Edit. (A.I.M.E.) ..... *Morris M. Leighton* 180
Über die Bitumina und Harze Österreichischer Braunkohlen (Ussar) *Gilbert H. Cady* 181
Crystals and X-Rays (Lonsdale) ..... *Horace Winchell* 184
Geología de México (Garfías & Chapin) ..... *M. L. Mignone* 184
Titanium, its Occurrence, Chemistry and Technology (Barksdale) 185
A Textbook of Geomorphology, 2nd Edit. (Worcester) 186
A Source Book in Greek Science (Cohen & Drabkin) 186
Applied Hydrology (Linsley, Kohler, & Paulhus) 186
Books Received ..... *Charles H. Smith* 186

Scientific Notes and News 190

Number 3.

Origin of the "Epithermal" Deposits ..... *Harrison Schmitt* 191
The Behavior of Some Diabase and Basalt Dilation Dikes in the Union Companion Mine, Cornucopia, Oregon ..... *A. F. Frederickson* 201
Ground-Water Problems in the Philadelphia Area ..... *Jack B. Graham* 210
Differential Thermal Curves of Certain Hydrous and Anhydrous Minerals, with a Description of the Apparatus Used ..... *A. J. Kauffman, Jr., and E. Don Dilling* 222
Laboratory Power Supply for Vibrator-Type Portable Geiger Counters *Ronald L. Ives* 245

Scientific Communications:

The Coal Deposits of Coahuila, Mexico ..... *J. González Reyna* 249
Polarization Figures and Rotation Properties—New Aids for the Mineragrapher *Eugene N. Cameron and Lewis H. Green* 252

Discussions:

Pegmatites of Montana ..... *Stephen E. Clabaugh* 254
Mining Geology and the Engineering Aspects of Mineral Exploration .. *H. H. Suter* 257

Reviews:

Einfurhrung in die Kristallographie (Schneiderhöhn) ..... *Horace Winchell* 259
Geologia Applicata all'Ingegneria (Desio) ..... *M. L. Mignone* 259
Must We Hide? (Lapp) ..... *M. L. Mignone* 260
Industrial Minerals and Rocks, 2nd Edit. (A.I.M.M.E.) 261
Friendly China (Bailey Willis) 262
The Colloid Chemistry of the Silicate Minerals (Marshall) 262
Books Received ..... *Charles H. Smith* 262

Society of Economic Geologists:

General Research Committee, Annual Report ..... *Chas. H. Behre, Jr., Chairman* 267

Scientific Notes and News 271

Number 4.

Geology of the Fissionable Materials ..... *George W. Bain* 273
The Status of Coal Resources Studies ..... *Walter V. Searight* 324
Structural and Tectonic Studies in the Cobar Mineral Field, New South Wales *G. F. Joklik* 331

Geological and Botanical Study of the Brandon Lignite and its Significance in Coal Petrology.....*Elso S. Barghoorn and William Spackman* 344
Special Field Applications of a Confirmatory Test for Lead.....*S. E. Jerome* 358

Scientific Communications:
Summary of Kinoshita's Kuroko Deposits of Japan.....*John J. Collins* 363
Sponsored Visits to the United States and the Japanese Recovery Program *Robert Y. Grant* 376

Discussions:
Syenitic Corundum Pegmatites near Bozeman, Montana.....*E. Wm. Heinrich* 378

Reviews:
An Introduction to Luminescence of Solids (Leverenz)..... 381
The Amadeus William Grabau Memorial Volume (Geol. Soc. China) *M. L. Mignone* 381
Les Gemmes et les Perles dans le Monde (Hermann).....*M. L. Mignone* 382
Introduction to College Geology (Holmes)..... 382
Engineers' Dictionary, Spanish-English and English-Spanish, 2nd Edit. (Robb) 382
Books Received.....*Charles H. Smith* 383

Society of Economic Geologists:
Abstracts of papers presented at the New York Meeting, February, 1950..... 385

Scientific Notes and News..... 392

Number 5.

Uraninite in the Coeur d'Alene District, Idaho *Ernest E. Thurlow and Robert J. Wright* 395
The Geology of the Aguilar Lead-Zinc Mine, Argentina.....*Frank N. Spencer, Jr.* 405
Geologic Features of North Dakota Lignite.....*Walter B. Roe* 434
Effects of Earthquakes, Trains, Tides, Winds and Atmospheric Pressure Changes on Water in the Geologic Formations of Southern Florida *Garald G. Parker and V. T. Stringfield* 441
Detailed Survey of the Chemical Composition of Rock Layers in an Agricultural Limestone Quarry.....*W. D. Keller, Arnold W. Klemme and E. E. Pickett* 461
Value of Domestic Production of Minerals from Various Classes of Rock *V. E. McKelvey, J. E. Crawford, D. F. Davidson and R. L. Boardman* 470

Scientific Communications:
A Summary of Horikoshi's Structure of Cupriferous Pyrite Deposits in Schist *John J. Collins* 480

Discussions:
Mining Geology: A Science.....*E. P. Kaiser* 482

Reviews:
Structural Petrology of Deformed Rocks, 2nd Edit. (Fairbairn & Chayes)..... 486
Bibliographie des Livres, Thèses et Conférences Relatifs à l'Industrie du Pétrole (Agout).....*M. L. Mignone* 486
Applied Sedimentation—A Symposium (Trask, Edit.)..... 487
Introduction to Theoretical Igneous Petrology (Wahlstrom)..... 487
Who Knows—and What, Among Authorities, Experts, and the Specially Informed..... 488
Books Received.....*Charles H. Smith* 488

Scientific Notes and News..... 491

Number 6.

Dispersion of Copper from the San Manuel Copper Deposit, Pinal County, Arizona
T. S. Lovering, L. C. Huff and H. Almond 493
Production, Classification, and Utilization of Western United States Coals
V. F. Parry 515
"Pneumatolysis" and the Liquid Inclusion Method of Geologic Thermometry
George C. Kennedy 533
Biogeochemical Investigations in the Tri-State District.....*John W. Harbaugh* 548
The Appraisal of Ore Reserves at a Japanese Copper Mine.....*John J. Collins* 568
Massive Leucoxene in Adirondack Titanium Deposit.....*E. P. Wheeler, 2nd* 574

Scientific Communications:
The Oolithic Hematite Deposits of Egypt.....*Gertrude Labib Nassim* 578

Discussions:
"Pneumatolysis" and the Liquid Inclusion Method of Geologic Thermometry
F. G. Smith, P. A. Peach, H. S. Scott, A. D. Mutch, G. D. Springer, R. W. Boyle and W. M. M. Ogden 582

Reviews:
The Geology, Paragenesis, and Reserves of the Ores of Lead and Zinc (Dunham, Edit.).....*George W. Bain* 588
X-Ray Crystallography (James).....*Horace Winchell* 590
Psychical Physics—A Scientific Analysis of Dowsing, Radiestesia, and Kindred Divining Phenomena (Tromp).....*Alan M. Bateman* 591
Advanced Atlas of Modern Geography (Bartholomew)..... 592
The Statistical Year Book, 1949, of the International Tin Study Group..... 592
Hydrology—The Fundamental Basis of Hydraulic Engineering, 2nd Edit. (Mead & Hunt)..... 592
Books Received.....*Charles H. Smith and M. L. Mignone* 593

Scientific Notes and News..... 598

Number 7.

The Search for New Mining Districts.....*Thomas B. Nolan* 601
Alteration and Metallization in the Bagdad Porphyry Copper Deposit, Arizona
Charles A. Anderson 609
A Portion of the System Silica-Water.....*George C. Kennedy* 629
Prospecting for Zinc Using Semiquantitative Chemical Analyses of Soils
Robert B. Fulton 654
The Genetic Classification of the Bed Rock Hypogene Mineral Deposits
Harrison Schmitt 671
Genesis of Asbestos and Barite, Cuddapah District, Rayalaseema, South India
P. B. Murthy 681

Discussions:
Origin of the Bendigo Saddle Reefs.....*Frank L. Stillwell* 697
Origin of the "Epithermal" Mineral Deposits.....*F. G. Smith and A. D. Mutch* 701

Reviews:
Economic Mineral Deposits, 2nd Edit. (Bateman).....*Eugene N. Cameron* 704
Selenium, its Geological Occurence and its Biological Effects in Relation to Botany, Chemistry, Agriculture, Nutrition, and Medicine (Trelease & Beath)
Chas. H. Behre, Jr. 708

Manganese Resources of the Artillery Mountains Region, Mohave County, Arizona (Lasky & Webber) ..... *Eldred D. Wilson* 710
The Geology of Indonesia (Van Bemmelen) 712
An Index of Mineral Species and Varieties, Arranged Chemically (Hey) 713
A German and English Glossary of Geographical Terms (Fischer & Elliott) 713
Books Received ..... *Charles H. Smith* 714

Scientific Notes and News 717

Number 8.

Polarization Figures and Rotation Properties in Reflected Light and Their Application to the Identification of Ore Minerals ... *Eugene N. Cameron and Lewis H. Green* 719
Experiments on the Deposition of Iron with Special Reference to the Clinton Iron Ore Deposits ..... *John R. Castaño and Robert M. Garrels* 755
Manganese on Punta Concepcion, Baja California, Mexico ..... *James A. Noble* 771
Structural Control of Orebodies as Illustrated by the Use of Vein Contours at the O'Brien Gold Mine, Cadillac, Quebec ..... *Joseph W. Mills* 786
Significant Replacement Textures at Cobalt and South Lorraine, Ontario, Canada *Edson S. Bastin* 808

Discussions:
Uraninite in the Coeur d'Alene District, Idaho ..... *Raymond F. Robinson* 818

Reviews:
Geology and Ore Deposits of the La Plata District, Colorado (Eckel, Williams, Galbraith, et al.) ..... *B. S. Butler* 820
Geology and Mineral Deposits of the Carterville District, Georgia (Kesler) *John Rodgers* 823
Geology for Engineers (Trefethen) ..... *Spencer S. Shannon, Jr.* 824
The Geology of the Commonwealth of Australia (Edgeworth David & Browne) *Alan M. Bateman* 825
Petroleum Production Engineering: Petroleum Production Economics (Uren) ... 826
Books Received ..... *Charles H. Smith* 827

Society of Economic Geologists:
Program of Round-Table Discussion of Permo-Pennsylvanian Stratigraphic Problems 831

Scientific Notes and News 833

Index, Volume 45 835

Contents, Volume 45 iii